

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-341203

**(43)Date of publication of application : 10.12.1999**

H04N 1/00  
// H05K 9/00

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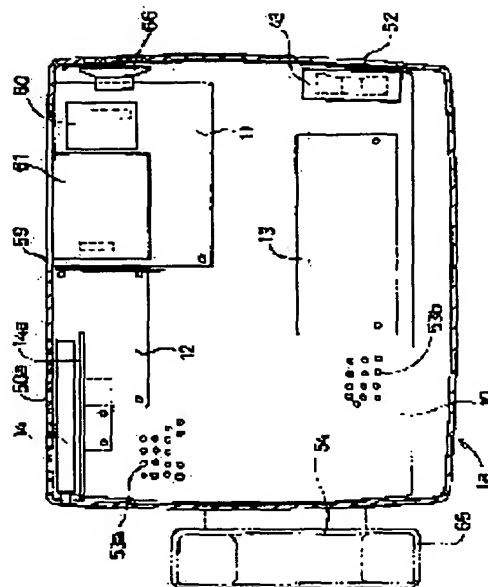
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## (54) FACSIMILE EQUIPMENT

**(57)Abstract:**

**PROBLEM TO BE SOLVED:** To attain deterioration prevention of communication performance in facsimile equipment.

**SOLUTION:** A speaker 66 and a cooling fan 43 are greatly separated from an NCU substrate 14 and a handset and a bad influence of a magnetic field generated from the speaker 66 and the cooling fan 43 does not reach the handset and the NCU substrate 14 by arranging a paper feeding unit for feeding sheets of paper for image forming, an image forming means and a document reading unit between a right and a left side surfaces of a main lower case 1a, arranging the speaker 66 and the cooling fan 43 on the right inside the main lower case 1a, arranging the handset on the left, of the main lower case 1a and arranging the NCU substrate 14 on the left rear part inside the main lower case 1a in a plane view.



## LEGAL STATUS

[Date of request for examination] 31.03.1999

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2962314

[Date of registration] 06.08.1999

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] Facsimile apparatus characterized by having equipped the main part case with the feed unit which feeds paper to the form for image formation, the image formation means, the manuscript reading unit, and the network control unit, having arranged the loudspeaker and the cooling fan to the unilateral within a main part case in plane view, and having arranged the hand set to the side besides a main part case.

[Claim 2] Facsimile apparatus according to claim 1 characterized by having arranged the aforementioned network control unit in the main part case which is distant from the aforementioned loudspeaker and the arrangement part of a cooling fan in the distance.

[Claim 3] The aforementioned image formation means is facsimile apparatus according to claim 1 or 2 characterized by having been constituted by the process unit which builds in the developer which forms a toner image in a photo conductor drum or this, the exposure unit for forming an electrostatic latent image in a photo conductor drum, and the fixing unit which carries out heating fixing of the toner image imprinted by the form, and having stationed the fan for cooling to the side of this fixing unit.

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[Translation done.]

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the composition of facsimile apparatus equipped with image formation means, such as a LASER beam printer and an electrostatic photograph formula.

[0002]

[Description of the Prior Art] Facsimile apparatus was equipped with the network control unit (NCU) and other facsimile apparatus for communication by the telephone line, or the hand set for conversation with telephone from the former. Moreover, the loudspeaker for reporting the reception from other facsimile apparatus to a user was contained in the main part case of facsimile apparatus.

[0003] On the other hand, the image formation means which carries out image formation of the image data which received to the form for record is arranged in the main part case of facsimile apparatus, and there were some which were equipped with the fan for cooling for emitting the heat emitted from this image formation means out of a main part case.

[0004]

[Problem(s) to be Solved by the Invention] However, since the strong magnetic field has always appeared from the permanent magnet (magnet) made to approach the coil for driving a diaphragm in the aforementioned loudspeaker and the magnetic field strong at the time of an operation also generated the motor section of the fan for cooling, when these parts were arranged near Above NCU and the hand set, signal transmission was disturbed greatly and there was a problem that transmission and a reception operation were blocked.

[0005] this invention is made in order to solve this problem, and it aims at offering the facsimile apparatus which can perform the stable transmission and reception.

[0006]

[Means for Solving the Problem] In order to attain this purpose, the facsimile apparatus of invention indicated to the claim 1 equips a main part case with the feed unit which feeds paper to the form for image formation, an image formation means, a manuscript reading unit, and a network control unit, arranges a loudspeaker and a cooling fan to the unilateral within a main part case in plane view, and arranges a hand set to a side besides a main part case.

[0007] Moreover, the facsimile apparatus of invention indicated to the claim 2 is arranged in the facsimile apparatus indicated to the claim 1 in the main part case which separated the aforementioned network control unit in the distance from the aforementioned loudspeaker and the arrangement part of a cooling fan. Furthermore, the facsimile apparatus of invention indicated to the claim 3 In the facsimile apparatus of the composition of a claim 1 or a claim 2 the aforementioned image formation means The process unit which builds in the developer which forms a toner image in a photo conductor drum or this, It is constituted by the exposure unit for forming an electrostatic latent image in a photo conductor drum, and the fixing unit which carries out heating fixing of the toner image imprinted by the form, and the fan for cooling is stationed to the side of this fixing unit.

[0008]

[Embodiments of the Invention] Next, the operation form which materialized this invention is explained based on a drawing. Drawing 1 is [ the outline sectional side elevation of facsimile apparatus and drawing 3 of the perspective diagram of the main component parts of facsimile apparatus and drawing 2 ] the notch plans and the plans in which drawing 4 shows arrangement of the control board within a main part case, an NCU substrate, the fan for cooling, a loudspeaker, etc. of facsimile apparatus in part.

[0009] The image formation means which consists of the scanner unit 2, a process unit 3, and a fixing unit 4 as the main part case of facsimile apparatus 1 is shown in drawing 1 , So that this main lower case 1a [ which equips with the feed unit 5 for supplying the form P for forming a picture from the bottom / made of synthetic resin ], and main lower

case 1a bottom may be covered and the vertical rotation of the front can be carried out greatly. It consists of upper case 1b made of synthetic resin pivoted in the flank posterior part grade of main lower case 1a, and the manuscript read unit 6 and the manuscript feed bar 7 can be laid in the upper surface of this upper case 1b, and it is constituted so that the manuscript read unit 6 bottom may be covered free [ attachment and detachment ] with a control panel 8.

[0010] And wearing fixation of the drive-system unit 9 which includes the drive motor and gear train for carrying out power transfer in the process unit 3, the fixing unit 4, and the feed unit 5 as the aforementioned image formation means is carried out into the receipt hollow on the left-hand side of main lower case 1a (not shown). Furthermore, the NCU (network control unit) substrate 14 grade for enabling conversation and transmission and reception of facsimile data between other telephone equipments or facsimile apparatus through a control board 11, the low voltage power supply substrate 12, the high-voltage-power-supply substrate 13, and the telephone line is arranged in the undersurface of the aforementioned main lower case 1a at the bottom covering 10 bottom made from a wrap metal plate. Namely, as shown in drawing 4, in plane view, the high-voltage-power-supply substrate 13 to the electrification machine 28 grade of a process unit 3 is arranged at the anterior rightist-inclinations part of the bottom covering 10. The NCU substrate 14 is fixed to support-plate 14a of the diaphragm combination which connected electrically on the left-hand side of the back end approach part of the bottom covering 10, and was set up, the low voltage power supply substrate 12 is arranged in the near, and the control board 11 is arranged on the right-hand side of [ back end approach ] the bottom covering 10.

[0011] The nose-of-cam side of the form P set in feeder section case 5a of the feed unit 5 where a laminating is carried out is pressed toward the feed roller 16 by the support plate 15 with energization spring 15a in feeder section case 5a, and is separated one sheet at a time from the above-mentioned drive-system unit 9 by the feed roller 16 and the separation pad 17 which power transfer is carried out and rotate. After the form P which the upper part side of a process unit 3 was fed [ form ] with the separated form P with the resist rollers 18 and 19 of a vertical couple, and had the picture formed in a front face of a toner by this process unit 3 has a picture fixed with the heating roller 21 and the press roller 22 of the fixing unit 4, it is discharged outside from the delivery mouth 20, and is discharged on the delivery tray which is not illustrated.

[0012] It is fixed to the stay section which the scanner unit 2 formed in the part of the lower part of the process unit 3 arranged in the plane view simultaneously center section of upper surface opening box-like main lower case 1a in one at the upper surface side of the bottom plate section of the aforementioned main lower case 1a on a screw etc. the oblong scanner drilled in the scanner unit 2 as an exposure unit so that a laser light-emitting part, the polygon mirror 23, a lens 24, and reflecting mirror 25 grade might be arranged and it might be prolonged along with the axis of the photo conductor drum 26 at the undersurface side of upper support-plate 2a made of synthetic resin in above top support-plate 2a, as shown in drawing 2 -- a wrap glass plate is passed for a hole, and it is constituted so that a laser beam may be irradiated and may be exposed to the peripheral face of the photo conductor drum

[0013] The aforementioned process unit 3 The developer which has the developing roller 29 and feed roller 30 which have been arranged to the upstream rather than the photo conductor drum 26 in the electrification machines 28, such as a scorotron type arranged under the aforementioned photo conductor drum 26, and the imprint roller 27 which rotates in contact with the upper surface and the photo conductor drum 26, and the feed direction, It consists of the cleaning equipment 32 grade arranged to the downstream rather than the developer (toner) feed zone 31, i.e., a removable toner cartridge, furthermore arranged to the upstream, and the photo conductor drum 26. When the peripheral face of the photo conductor drum 26 scans a laser beam from the aforementioned scanner unit 2 in the electrification layer formed with the electrification vessel 28, an electrostatic latent image is formed. After the developer in the aforementioned toner cartridge 31 (toner) is stirred with an agitator body (not shown) and being emitted, it is supported by the peripheral face of a developing roller 29 through a feed roller 30, and toner layer thickness is regulated by the blade. When a developer adheres from a developing roller 29, it develops the electrostatic latent image of the photo conductor drum 26, and it is imprinted by the form P passing through between the imprint roller 27 and the photo conductor drums 26. And the developer which remained on the photo conductor drum 26 is recovered by cleaning equipment 32.

[0014] This process unit 3 is cartridge-ized by including in the case made of synthetic resin, and the aforementioned main lower case 1a is equipped with this cartridge-ized process unit 3 removable. The manuscript reading unit 6 arranged on above top case 1b The oblong stuck type image sensors 34 arranged in the unit case 42 as shown in drawing 1, drawing 2, and drawing 6 (CIS), the manuscript separation delivery roller 35 arranged near the manuscript feed bar 7, and the conveyance roller pair arranged on both sides of the aforementioned contact type image sensor 34 at a conveyance upstream and a downstream, respectively -- with 36 and 37 It has the drive-motor unit 39 by which the frame. When passing through between the press board 38 arranged in the shape of [ with the white undersurface ] a downward convex curve, and the upper surfaces of CIS34, the manuscript (not shown) sent one sheet at a time through

the aforementioned manuscript separation delivery roller 35 is constituted so that the picture of a manuscript may be read.

[0015] Moreover, as shown in drawing 6, to the anterior right part in main lower case 1a, the air duct 45 prolonged in the stowage 44 for containing the fan 43 for cooling who bursts air into laughter, the passage direction of Form P, and the direction that intersects perpendicularly is open for free passage to the outside of a case, and is formed in it at it. In this case, as shown in drawing 2 and drawing 6, upper surface Itabe 45a of an air duct 45 is formed in the shape of [ of cross-section facing down ] abbreviation for V characters, and the heat of the heating roller 21 which is located between the process units 3 and the fixing units 4 which this upper surface Itabe 45a arranges to the upper surface side of main lower case 1a, and can be set fixing unit 4 is transmitted to a process-unit 3 side. In addition, it is constituted so that the part which formed successively between the soffits of upper surface Itabe 45a of the letter of the cross-section facing-down abbreviation for V characters with the diaphragms 46, such as a product made from a synthetic-resin board, and was surrounded by these members may serve as an air duct 43.

[0016] Moreover, as shown in drawing 4, drawing 6, drawing 7 (a), drawing 7 (b), and drawing 8 The back end side of main lower case 1a (part which meets the aforementioned NCU substrate 14), Many holes 50a, 50b, and 51 are drilled. the rear upper surface and a left lateral -- an air suction -- the right lateral of main lower case 1a by which the aforementioned fan 43 for cooling is stationed -- blow off -- while many holes 52 are drilled -- the rear left part and front part left part of the bottom covering 10 -- an air suction -- many holes 53a and 53b are drilled Moreover, as shown in drawing 2, drawing 5, and drawing 6, the air hole 57 is drilled inside main lower case 1a by the wall surface with which air holes 55a and 55b divide the stowage 44 of an air hole 56 and the aforementioned fan 43 for cooling into the part where an air hole 54 stands face to face against the rear face of a process unit 3 under the installation section of the feed unit 5 in the part of the aforementioned upper surface Itabe 45a. in addition, to the unilateral by the side of the rear face of main lower case 1a (an example rightist-inclinations part) As shown in drawing 2, drawing 4, drawing 7 (a), and drawing 7 (b), opening 59 is formed over a rear face and the upper surface. From this opening 59, the expanded-RAM (at any time memory which can be written) board 60, and the optional board of LAN (local-area network) board 61 grade as it is removable Nothing, This opening 59 is constituted so that opening can be carried out free [ attachment and detachment ] with the side view inverse L-shaped covering object 62.

[0017] And in this invention, the headset (hand set) 64 for holding conversation with other telephone equipments is laid on the cradle 65 which protruded outward from the left lateral of main lower case 1a, and the loudspeaker 66 for call origination is being fixed to the posterior part side of the right lateral in main lower case 1a. Namely, the fan 43 for cooling and loudspeaker 66 which the big magnetic field in the motor section or the magnet section generates in this invention at the time of an operation It arranges to an unilateral (in the example, it sets to drawing 4, and is right-hand side) in the plane view of main lower case 1a as a main part case, and the NCU substrate 14 and hand set 64 which are easy to be influenced of the aforementioned magnetic field at the time of communication are arranged to a side (in the example, it sets to drawing 4, and is left-hand side) besides main lower case 1a.

[0018] Drawing 9 is the block diagram showing the control system of the facsimile apparatus 1 to which this invention was applied. Facsimile apparatus 1 responds to the various instructions inputted through a control panel 8 from a user. A setup of various processing operation, reading of the manuscript picture by the manuscript reading unit 6, Transmit-data-izing of a manuscript picture, coding of transmit data, transmission and reception of facsimile data, Perform record in the form P in a decryption of received data, and the image formation means of the decrypted facsimile data, and also A copy (copy) processing facility called the image formation to the form P by the manuscript read by CIS (contact type image sensor)34 and the image formation means of the manuscript reading unit 6, Based on the data transmission from external devices, such as a personal computer which is not illustrated, it also has the printer processing facility which prints the transmitted data in Form P, and the scanner processing facility of transmitting the image data read using the aforementioned manuscript reading unit 6 to the aforementioned external device.

[0019] In order to perform these operation, facsimile apparatus 1 The image formation means which consists of a control panel 8, the manuscript reading unit 6, the scanner unit 2 of a laser beam, a process unit 3, and fixing unit 4 grade, It is carried in a control board 11. CPU67 which performs various control and operations, ROM68 which memorized the control program, and a part as receiving buffer memory 69a RAM69 used, the NCU substrate 14, and this NCU substrate 14 are minded. Among other facsimile apparatus, facsimile data Conversation with the modem 70 for transmitting and receiving, and other telephone equipments The headset for carrying out 64, the loudspeaker 66 for call origination, (Hand set) To each mechanical component of the aforementioned image formation means, power The stepping motor for giving Low-pressure power in the drive-system unit 9 and the aforementioned control board 11 grade which it had It has the bus-line 71 grade which connects the fan 43 for cooling for discharging the high-voltage-power-supply substrate 13 for supplying high tension power, and cooling air outside the plane, and these to the electrification machine 28 of the low voltage power supply substrate 12 for supplying, and the aforementioned process

unit 3.

[0020] In addition, the LAN board for building a network so that an external device and data, such as the expanded RAM board 60 for increasing the amount of memory mentioned above and two or more computers, may be transmitted is optional equipment which can be added by request of a user. In above-mentioned composition, if a power supply is switched on, while power will be supplied to each aforementioned substrates 11, 12, 13, and 14 and it will become various control execute permissions, the fan 43 for cooling does a rotation drive. then, air suction, such as a back end side of main lower case 1a, -- the cooling air inhaled from Holes 50a and 50b It passes through the surface part of the NCU substrate 14, a control board 11, and the low voltage power supply substrate 12. subsequently While resulting ahead of main lower case 1a through between the bottom coverings 10 the undersurface side of the scanner unit 2 Air hole 55a of a part which stands face to face against the air hole 54 of the lower part of the installation section of the feed unit 5, and the rear face of a process unit 3, The cooling air which passed through between the upper surface of a process unit 3 and upper case 1b through 55b gathers in a stowage 44 through the air hole 56 and air hole 57 of a part of the aforementioned upper surface Itabe 45a, and is emitted out of a main part case by the fan 43 for cooling.

Thereby, the heat of the heating roller 21 of the fixing unit 4 does not have a bad influence on a process unit 3.

[0021] When [ which it appears above and is a method (front through out path) ] Form P is discharged by the front end of main lower case 1a through a process unit 3 and the fixing unit 4 from the feed unit 5 by which the aforementioned image formation means has been arranged at the posterior part of main lower case 1a, As a result of arranging the heating roller 21 in the fixing unit 4 used as a hot heat source at the front end side of main lower case 1a, it is desirable to also station the fan 43 for cooling for discharging the heat to the anterior part approach part (part near a heat source) of main lower case 1a because of improvement in the cooling effect. On the other hand, since it is desirable to arrange in the position distant from the position of the aforementioned fan 43 for cooling in the distance if possible, in the plane view of main lower case 1a, the aforementioned NCU substrate 14 and a hand set 64 station the fan 43 for cooling to a right lateral anterior part approach part, and should just arrange the NCU substrate 14 and a hand set 64 to a left lateral side.

[0022] In addition, since the loudspeaker 66 should also be arranged in as distant from the NCU substrate 14 and a hand set 64 a position as possible, although it arranges in this example to the right lateral rear approach part of main lower case 1a, as long as proper space is in the right lateral front part approach part of main lower case 1a, you may arrange a loudspeaker 66 positively in the part. Thus, if it arranges, the effect of being easy to reach the ear of the user located ahead of facsimile apparatus 1 in the call origination signal and conversation from other facsimile apparatus uttered by the loudspeaker 66 will be done so.

[0023] When the form by which image formation was carried out passes through an image formation means and a U-turn is made in the direction of the rear by the main part case upper surface side, an image formation means will be arranged at the rear approach part of a main part case, and will also arrange the arrangement position of the fan 43 for cooling to a rear approach part among the sides within a main part case in a shell and this case.

[0024]

[Effect of the Invention] As explained above, the facsimile apparatus of invention indicated to the claim 1 equips a main part case with the feed unit which feeds paper to the form for image formation, an image formation means, a manuscript reading unit, and a network control unit, arranges a loudspeaker and a cooling fan to the unilateral within a main part case in plane view, and arranges a hand set to a side besides a main part case.

[0025] If constituted, between the left and right laterals of a main part case Thus, a feed unit, An image formation means, and the loudspeaker and cooling fan which have been arranged to the unilateral within a main part case as a result of arranging a manuscript reading unit, Distance with the hand set arranged to the side besides a main part case will be separated greatly, it is lost that the bad influence of the magnetic field which comes out of a loudspeaker and a cooling fan attains to a hand set, and the effect that aggravation of a communication performance can be prevented certainly is done so.

[0026] Moreover, invention indicated to the claim 2 is set to the facsimile apparatus indicated to the claim 1. Since the aforementioned network control unit is arranged in the main part case which is distant from the aforementioned loudspeaker and the arrangement part of a cooling fan in the distance The network control unit for communicative control is also separated from the aforementioned loudspeaker and the arrangement part of a cooling fan in the distance. Receiving the bad influence of the magnetic field which comes out of a loudspeaker and a cooling fan is lost, and the effect that aggravation of a communication performance can be prevented certainly is done so.

[0027] Invention indicated to the claim 3 is set to the facsimile apparatus of the composition of a claim 1 or a claim 2. furthermore, the aforementioned image formation means The process unit which builds in the developer which forms a toner image in a photo conductor drum or this, It is constituted by the exposure unit for forming an electrostatic latent image in a photo conductor drum, and the fixing unit which carries out heating fixing of the toner image imprinted by

the form. The effect that the heat generated from the aforementioned fixing unit can be quickly discharged out of a main part case by the fan for cooling is done so, losing the bad influence of the aforementioned magnetic field, since the fan for cooling is stationed to the side of this fixing unit.

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[Translation done.]

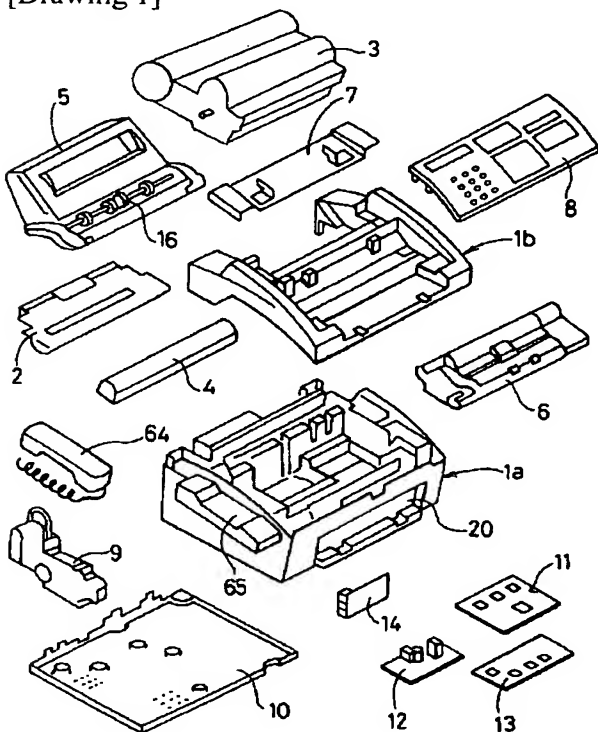
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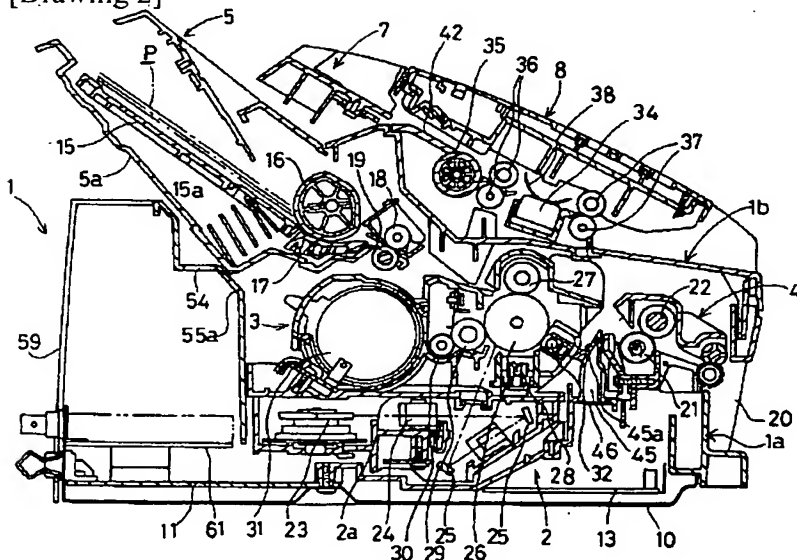
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## DRAWINGS

[Drawing 1]

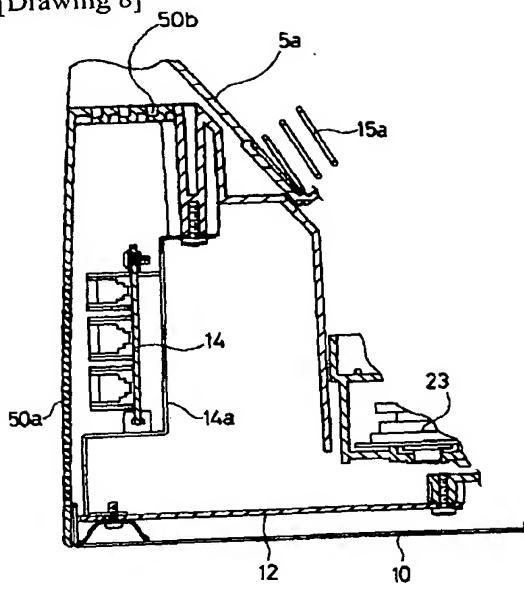


[Drawing 2]

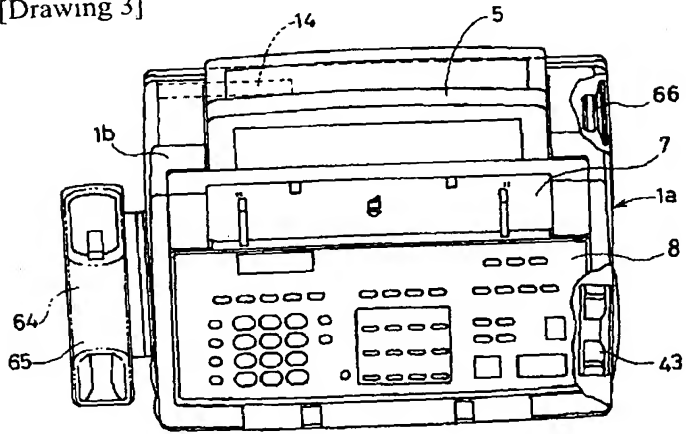




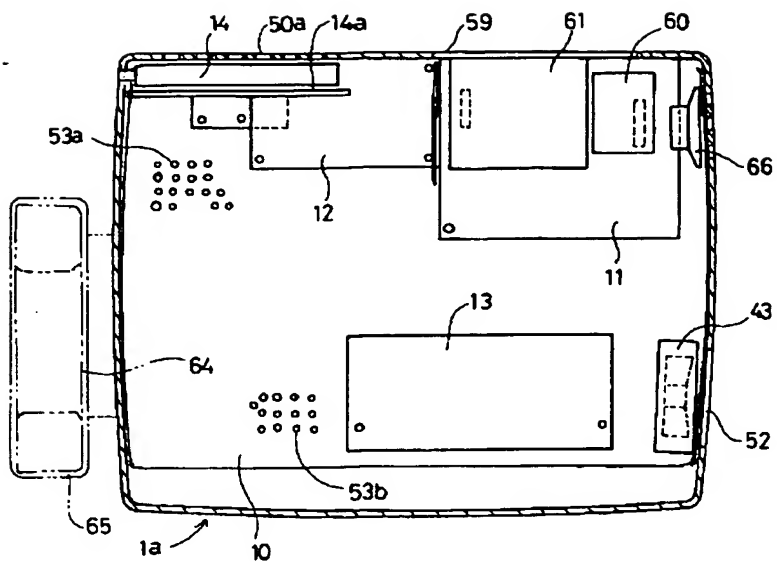
[Drawing 8]



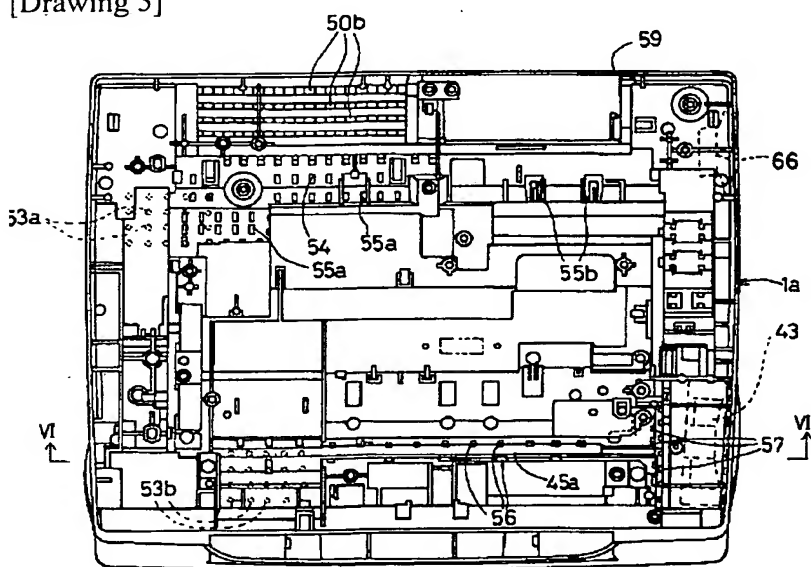
[Drawing 3]



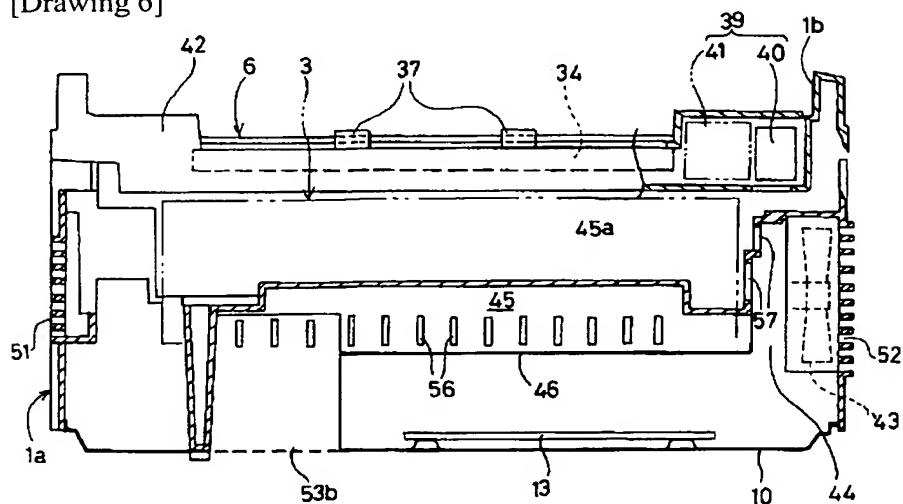
[Drawing 4]



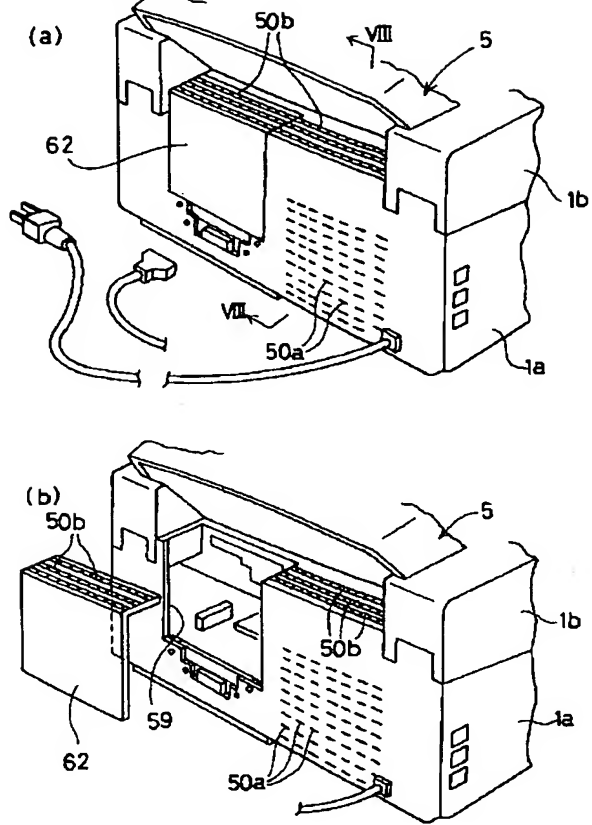
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Drawing 9]

